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Cooperative Economic Insect Report

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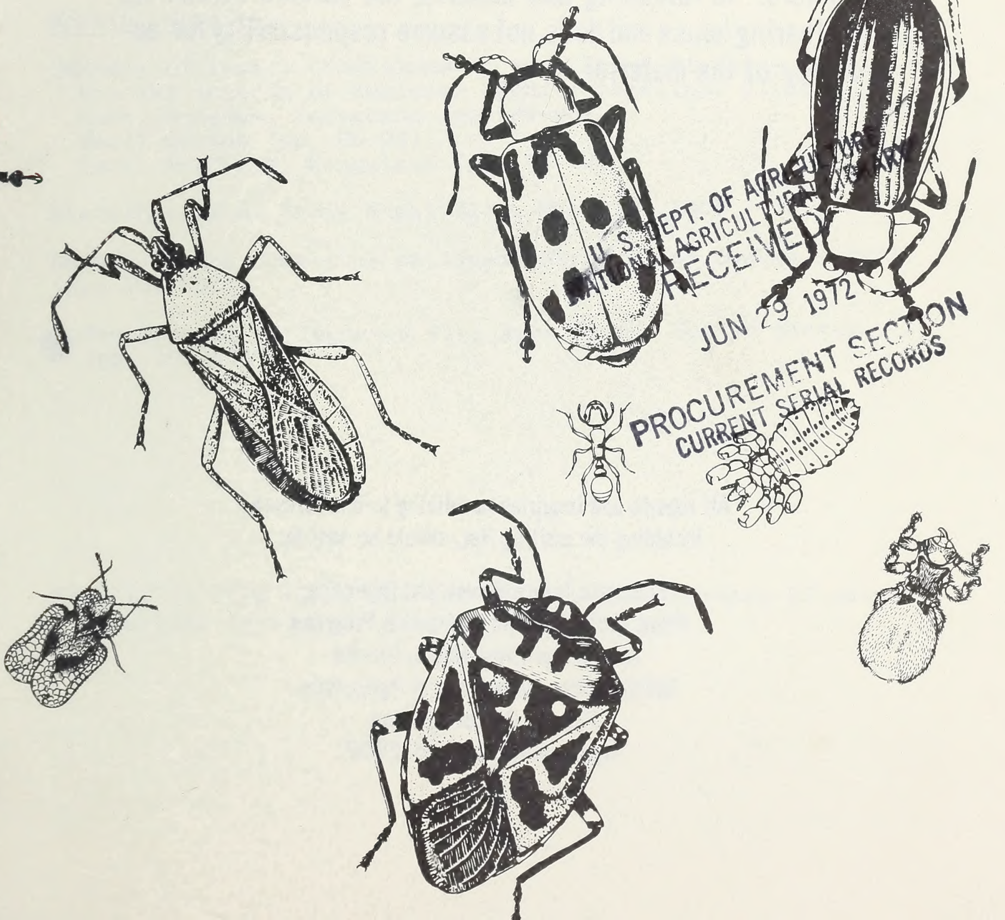

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The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 22 March 3, 1972 Number 9

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMY CUTWORM larvae appeared on alfalfa in Oklahoma. (p. 77).

ALFALFA WEEVIL in 1972 expected to be economic in northwest Arkansas. (p. 78). EGYPTIAN ALFALFA WEEVIL heavy on alfalfa in Arizona. (p. 78).

GREEN PEACH APHID troublesome on lettuce in Arizona. (p. 78).

CITRUS RED MITE building up on citrus in Arizona and TEXAS CITRUS MITE appearing in lemon groves. (p. 79).

Detection

For new island record see page 80.

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  Corn, Sorghum, Sugarcane (pp. 89-96).
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  Turf, Pastures, Rangeland (pp. 98-99).

Distribution of Brown Wheat Mite. Map. (p. 100).

Report of the Committee on Insect Surveys and Losses - 1972. (pp. 101-102).

Two Species of Imported Fire Ants in the United States. (pp. 103-104).

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WEATHER OF THE WEEK ENDING FEBRUARY 28

Reprinted from Weekly Weather and Crop Bulletin supplied by Environmental Data Service, NOAA.

HIGHLIGHTS: Heavy rains and melting snow caused a dam to fall in West Virginia with heavy loss of life and property. The Southwest continues very dry. Springlike temperatures were common over much of the West and South.

PRECIPITATION: The storm that had battered the Northeast so severely late last week tapered off, and by Monday morning, February 21, skies were becoming clear again. A few snow flurries continued in the vicinity of the Great Lakes. A series of winter storms paraded across the northern States during the week, bringing typical wintry precipitation, accompanied in some places by strong winds. Rains occurred along the Pacific coast from Washington to northern California, with snow from the Cascades and northern Sierras, eastward across the northern Rocky Mountains to the northern Great Plains. Snow at Stampede Pass accumulated to 16 feet. Stampede Pass is almost 4,000 feet above sea level. Snow fell in the northern Great Plains, but in parts of the central Plains the precipitation occurred as a slippery mixture of snow and freezing rain, due to a southerly flow from the Gulf of Mexico. A mixture of sleet, snow, and rain fell in parts of the Pacific Northwest. These mixtures of snow and freezing rain bordering the Snow Belt caused hazardous driving conditions. More winter weather came to the East after midweek, snow in the North, rain in Kentucky, Tennessee, and eastward to the middle Atlantic coast; and an area of freezing rain and freezing drizzle sandwiched between the snow and the rain, producing a dangerous glaze on the highways and byways. A few thunderstorms occurred Thursday in southern Missouri, northern Arkansas, and eastward to the mountainous areas of Virginia, and North Carolina. Weekend precipitation included the continuation of rains along the northern

Weather of the week continued on page 104.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Euxoa auxiliaris) - OKLAHOMA - Ranged 1-6 per square yard in alfalfa in Stillwater area, Payne County. Larvae ranged up to half grown. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - ARIZONA - Trace in barley and wheat in Salt River Valley of Maricopa County. Light in same crops in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Light to medium, 4 to 12 per linear foot, of barley in Roosevelt, Chaves County. (Mathews). TEXAS - Generally light throughout Panhandle on small grains. OKLAHOMA - Ranged 30-35 per linear foot of wheat in Washita County and 1-10 per linear foot in several areas of Payne County. Averaged 1 per linear foot in Coyle area, Logan County. (Okla. Coop. Sur.).

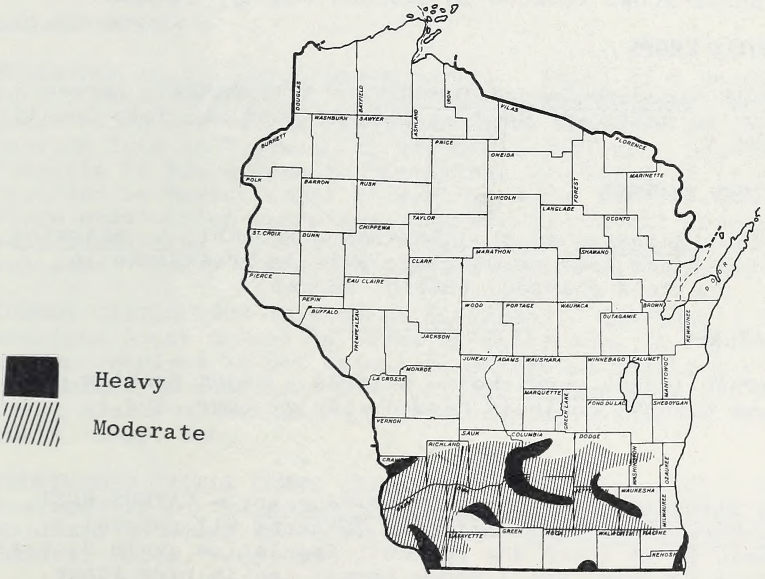
SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Ranged 100-200 per 100 sweeps of alfalfa in Yuma Valley, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Very light in new alfalfa fields near Roswell, Chaves County. (Mathews).

SMALL GRAINS

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Ranged up to 50 per linear foot in favorable areas on wheat in Lake Carl Blackwell area, Payne County. (Okla. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - WISCONSIN - Zone of high hazard expected in 1972 based on egg survey in fall of 1971.



KENTUCKY - Eggs averaged 111 per square foot in several Fayette County fields and 19 per square foot in Marion County field. (Barnett). MISSOURI - Egg counts completed for November and December. Most counts heavier in December. (Huggans, Munson).

ARKANSAS - Larvae noted in alfalfa since late January in Lafayette County. Early instars noted in Logan County. Three adults and some eggs noted in Washington County. Expect economic populations again in 1972 in northwest area. (Boyer). OKLAHOMA - Alfalfa weevil larvae ranged 1-5 per terminal in 16 percent of terminals in alfalfa in Payne County. Of 245 dead stems checked, 31 contained 245 eggs. (Okla. Coop. Sur.). TEXAS - Larvae ranged 100-300 per square foot in alfalfa in Burleson County. First-generation adults beginning to emerge in central areas. (Latham).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Ranged 400-600 per 100 sweeps of alfalfa in Yuma Valley, Yuma County. (Ariz. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Ranged 40-50 per 100 sweeps of alfalfa in Yuma Valley, Yuma County and 650 in Maricopa County. (Ariz. Coop. Sur.).

SOYBEANS

A CERAMBYCID BEETLE (Dectes texanus texanus) - NORTH CAROLINA - Economic damage reported for first time from 20-acre Bladen County field and 10-acre Johnston County field. Damage previously restricted mostly to Washington, Beaufort, Hyde, and Tyrrell Counties. (Hunt, Clapp).

TOBACCO

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - FLORIDA - Troublesome in untreated seed beds of flue-cured tobacco in northern areas. (Whitty, Driggers). Light to moderate in untreated seed beds of shade-grown tobacco in Gadsden County. (Tappan).

MISCELLANEOUS FIELD CROPS

A GELECHIID MOTH (Leucogonia californica) - CALIFORNIA - Larvae 3 per linear foot on safflower seed at Knights Landing, Yolo County. (Cal. Coop. Rpt.).

POTATOES, TOMATOES, PEPPERS

A LEAFMINER FLY (Liriomyza sp.) - ARKANSAS - Probably L. brassica with counts of 3-4 per leaf on tomato plants in greenhouse in Butler County. Controls planned. (Smith, Morgan).

GENERAL VEGETABLES

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Major problem of lettuce in Yuma County, controls needed. (Ariz. Coop. Sur.).

CITRUS

Citrus Insect Situation in Florida - Mid-February - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 76 (norm 61) percent of groves; economic in 49 (norm 42) percent. Population again decreased and will decline further. Still above normal and in high range. Highest districts south, west, and central. CITRUS RED MITE (Panonychus citri) infested 25 (norm 36) percent of groves; economic in 2 (norm 14) percent. Population lowest for February in 21 years of record. Little change expected. Highest district west. TEXAS CITRUS MITE (Eutetranychus banksi) infested 22 (norm 31) percent of groves; economic in 6 (norm 11) percent. Also much below normal and at lowest February level since 1963. Little change expected. Highest district east. SIXSPOTTED MITE (Eotetranychus sexmaculatus) expected to appear on new inside foliage in scattered groves. GLOVER SCALE (Lepidosaphes gloverii) infested 75 (norm 78) percent of groves; economic in 2 (norm 13) percent. Population below normal and in moderate range. Slight increase expected. Highest districts west and south. PURPLE SCALE (L. beckii) infested 67 (norm 73) percent of groves; economic in 2 (norm 7) percent. Population below normal and low; slight increase expected. Highest district north. CHAFF SCALE (Parlatoria pergandii) infested 47 (norm 57) percent of groves; none economic (norm 6 percent). This scale will remain at low level in all districts. YELLOW SCALE (Aonidiella citrina) infested 29 (norm 58) percent of groves; economic in 1 (norm 10) percent. Population will remain below normal and low. Slight increase probable. Highest district east. BLACK SCALE (Saissetia oleae) infested 49 (norm 31) percent of groves; economic in 23 (norm 12) percent. Population higher than in any February in 21 years of record. Currently at moderate level but expected to drop to low level. Highest districts east and central and lowest south. An ARMORED SCALE (Unaspis citri) infested 30 percent of groves and 21 percent economic. Population higher than in any prior month. Slight increase expected. Whitefly larvae more abundant than usual for February. Adults will become numerous early in March. APHIDS expected to increase rapidly early in March. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS RED MITE (Panonychus citri) - ARIZONA - Heaviest count 22.14 per leaf on February 15. Buildup occurring faster than expected. Eutetranychus banksi (Texas citrus mite) appearing in lemon groves in Yuma County. (Ariz. Coop. Sur.).

MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - Total of 2 cases reported in U.S. February 20-26, as follows: TEXAS - Duval and Zapata. Total of 86 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 40, Coahuila 7, Nuevo Leon 8, Tamaulipas 31. Total of 77 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screwworm flies released: Texas 5,618,000; Mexico 94,376,000. (Anim. Health).

COMMON CATTLE GRUB (Hypoderma lineatum) - KENTUCKY - Larvae averaged 5 per animal on backs of dairy cows in Fayette County. Larvae averaged 25 per animal on untreated yearling steers and 20 per animal on untreated beef cattle. (Knapp et al.). OKLAHOMA - First adults of season reported annoying cattle in Payne County. (Okla. Coop. Sur.).

SHORTNOSED CATTLE LOUSE (Haematopinus eurysternus) - OKLAHOMA - Averaged 11 per hair part on steers in Payne and Noble Counties. Moderate to heavy in Woodward County and moderate in Seminole County. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

CARPENTER ANT (Camponotus caryae discolor) - TEXAS - This species and C. pennsylvanicus caused numerous infestations in Limestone and Brazos Counties. (Green, Brown).

STORED PRODUCTS

CONFUSED FLOUR BEETLE (Tribolium confusum) - KENTUCKY - Adults averaged 73 per bushel of stored wheat in Washington County. (Barnett).

SOUTHERN FIRE ANT (Solenopsis xyloni) - OKLAHOMA - Adults infesting bulk grain storage areas in feed and milling establishment at Calexico, Imperial County. (Okla. Coop. Sur.).

BENEFICIAL INSECTS

DAMSEL BUGS (Nabis spp.) - OKLAHOMA - Adults in aphid infested wheat in Payne County. (Okla. Coop. Sur.).

HAWAII INSECT REPORT

Turf and Pasture - GRASS WEBWORM (Herpetcgramma licarsisalis) larvae 3 per square yard, caused light spotty damage to Kikuyu grass at Haiku, Maui. Field collected larvae revealed 8 percent parasitism by Casinaria infesta (an ichneumon) and Eucelatoria armigera (a tachina fly). Light trap collections on Oahu show relatively static adult populations during past months (January 140, December 133, November 211, October 115). (Miyahira).

General Vegetables - A MEMBRACID BUG (Antianthe expansa) heavy and widespread in backyard plantings of solanaceous crops at Ewa, Oahu. No infestations in commercial plantings of sweet peppers and tomatoes. CARMINE SPIDER MITE (Tetranychus cinnabarinus) moderate on 50 percent of leaves (mostly older) in 0.25 acre of mature snap beans; light in young adjacent planting of the same crop at Waianae, Oahu. All stages of LEAFMINER FLIES (Liriomyza spp.) light in both fields. (Kawamura).

Forest and Shade Trees - GREENHOUSE THRIPS (Heliothrips haemorrhoidalis) heavy on 20 Pinus spp. trees at Kula, Maui; severe on older needles. (Miyahira). A BARK BEETLE (Xylosandrus compactus) moderate in several acres of Eucalyptus sideroxylon and E. pilularis trees at Waimanalo, Oahu; about 25 percent of trees infested by adults and brood galleries. Many trees show varying degrees of dieback. (Kashiwai).

Miscellaneous Insects - A MEALYBUG (Geococcus coffeae) specimens found infesting undetermined tree roots in caves at Kokoa, Kauai and Hana, Maui for new island records. G. coffeae was previously reported only from the islands of Oahu and Hawaii. (Howarth).

DETECTION

New Island Record - A MEALYBUG (Geococcus coffeae) HAWAII - Kauai, Maui (p. 80).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1971

(Continued from page 67)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Highlights:

Armyworm treatment was uneffective in Nebraska. CORN EARWORM was heavy in Idaho, Kansas, Oklahoma, Mississippi, and Alabama. Control was needed on a million acres of sorghum in Kansas for GREENBUG. POTATO LEAFHOPPER damaged peanuts and alfalfa in Virginia. Heavy numbers of SPOTTED ALFALFA APHID and dry weather destroyed alfalfa in Oklahoma.

ARMY CUTWORM (Euxoa auxiliaris) heavily damaged some winter wheat in MONTANA. Damage was less in the 10,000 to 15,000 acres north and south of Joliet. Damage was heavy on smaller acreage of alfalfa in Cascade and Broadwater Counties. Controls were applied to 20,000 acres of grain in Chouteau County, 3,000 in Hill County, and 3,000 in Liberty County. Sweet Grass and Stillwater Counties had 4,000 acres infested. in COLORADO, larvae fed on winter wheat in Weld and Larimer Counties, late March. By mid-April, larvae could be found in wheat throughout most of northeastern Colorado. Most populations were noneconomic and few controls were applied. Larvae caused scattered damage to fields of sugar beets in Pembina County, NORTH DAKOTA, from May through June. Controls were necessary. Larvae in MINNESOTA damaged scattered fields of flax and sunflowers in mid-June in Stevens and Grant Counties. One isolated report was received from Becker County. Counts of 10-18 larvae per square foot were found in some fields; some fields were destroyed or seriously damaged. Damaged fields were in the diverted acres program in 1970 and were apparently weedy in 1971. Some controls or replanting was necessary.

ARMYWORM (Pseudaletia unipuncta) infestations were light in NORTH DAKOTA this season. Light traps did not indicate any problem areas. One hailed-out field of oats was damaged in Ward County. Moth flights in NEBRASKA were noted from May 10 to September 30 at Concord, Dixon County, with a peak on July 8 and September 9. First-generation larvae on June 15 ranged up to 5 per square foot in Lancaster County wheat, but little damage was noted. A relatively high first-generation moth flight in central Nebraska led to scattered heavy infestations on corn, particularly grassy and weedy fields. Damage was noted to corn in York, Seward, Platte, Phelps, Gosper, Hall, and Polk Counties. In Seward County on August 5, larvae ranged 1-2 per ear on about 20 percent of the corn ears. Most fields examined did not suffer significant economic losses. Controls were almost universally ineffective. Some locally heavy damage occurred to millet and brome-wheatgrass pastures in Cheyenne, Kimball, and Banner Counties in the panhandle, where up to 7 larvae per square foot were reported in late August. Armyworm was a minor problem in KANSAS during 1971. Up to 35 larvae per square foot were found in brome and fescue grasses in Riley County about mid-May, and up to 8 per square foot were found in localized areas on wheat in Riley and Pottawatomie Counties.

Armyworm adults were trapped in MISSOURI during the first week of April in Pemiscot and Platte Counties. Light larval counts (0-7 per square foot) were observed in the southern area in early May.

Counts remained light in the southeastern area, but in the southwestern area counts increased to 14-26 larvae per square foot. Controls were applied to some wheat and barley in the southwestern area. Armyworms caused no damage to wheat and barley in the northwestern area because of a high incidence of parasites and disease. Populations were light in orchard grass and fescue in the southwestern area in early May and increased to 5-28 larvae per square foot by late May. A few fields were treated, but generally the population in Missouri was light.

Some armyworm counts in ARKANSAS were up to 10 per square foot in wheat. Not more than 5 percent of the total crop was treated. It was also troublesome in orchard grass and fescue in some areas. Larvae in ALABAMA infested several hundred acres of wheat in Monroe County; controls were needed. Damage first occurred on May 5.

Armyworm in KENTUCKY was first reported from Ballard and Caldwell Counties on May 25. Damage was heaviest in Ballard, Caldwell, Rockcastle, Larue, Pulaski, and Hopkins Counties. Damage was lighter than in the previous 2 years, except in isolated fields. Controls were applied at several locations in Pulaski County. Armyworm was usually noneconomic on wheat, although an occasional field in south-central ILLINOIS had sufficient numbers to warrant treatment. Approximately 38,000 acres of wheat treated in 1971. Larvae in INDIANA were economic in one southwestern area field in July. The first moth emergence in OHIO occurred on April 11, 12 days earlier than in 1970 and 21 days earlier than in 1969. Moth numbers during May 14 to 20 were nearly 3 times higher than during a similar period in 1970 and nearly 5 times higher than in 1969. Larvae in Wayne County destroyed 200 acres of no-till field corn. In MICHIGAN the first adult collection of the season was at the Livingston County blacklight station on May 8. Cool night temperatures reduced activity. The weekly total for the Lenawee County station ending May 10 was 24 moths. Adult blacklight counts were heavier at the Allegan and Ottawa County stations with totals for 3 nights near 100. Armyworm problems were at an all-time low throughout Michigan.

Armyworm from first to third instar larvae was abundant in Montgomery, Pulaski, Lee, Rockingham, and Lancaster Counties on no-till corn June 3 in VIRGINIA. Of the corn surveyed, 70 percent showed damage with a few fields in Lee County completely destroyed. By June 18 the following counties were infested: Washington, Smyth, Shenandoah, Franklin, and Caroline. In general, the infestation appeared to be more spotty than in 1970. Adults peaked between June 6 and 30, with a total of 702 adults taken in this interval in the blacklight trap at Blacksburg, Montgomery County. Infestations in MARYLAND were above normal on small grain in Dorchester, Queen Annes, and Talbot Counties with about 3,000 acres requiring controls. Infestations outside these counties were light to moderate. During the first week in June, infestations in Washington, Frederick, Montgomery, Carroll, and Harford Counties reached economic levels; controls were applied to about 6,000 acres of corn. No-till corn planted after rye showed the greatest damage. Second and third instars were common during the first two weeks in June. Damage levels dropped below economic thresholds by June 25. Corn growers in the central counties can expect moderate to heavy spring infestations to occur again in no-till corn planted after rye.

First armyworm adults in DELAWARE were present in light trap collections on April 25. Injury to corn occurred in late May and early June but was generally light in most areas. In NEW HAMPSHIRE, adult collections peaked in late July and October.

ASTER LEAFHOPPER (Macrosteles fascifrons) was detected in late July and early August in COLORADO. Populations were as high as 15 per sweep, and some controls were applied. Lettuce was damaged in Pueblo and Otero Counties, with aster yellows at 15 percent. Infestations in NORTH DAKOTA were widespread by the end of May in Richland, Ransom, and Sargent Counties. Populations ranged up to 80 per 100 sweeps in barley and wheat and up to 160 per 100 sweeps in rye. Populations in Barnes, La Moure, and Dickey Counties ranged up to 70 per 100 sweeps by June 4.

BEET LEAFHOPPER (Circulifer tenellus) adults averaged 0.11 per square foot in mid-April on overwintering host plants in eastern Malheur County, OREGON. Adult surveys in March and April in IDAHO indicated heavier than normal populations in the rangeland areas of Canyon County southeast to Twin Falls County. The density of host plants was below normal. Surveys in late April and May indicated that intermittent cold, wet weather had materially reduced the spring brood of leafhoppers. Curly top injury in UTAH was lighter than normal--15 percent loss of tomato plants in Washington County and less than 2 percent loss in northern and central areas. Beet leafhopper appeared in COLORADO sugar beets the week of June 12-18. Counts remained light with very little incidence of leafhopper damage or curly top disease.

CORN EARWORM (Heliothis zea) was a problem in the corn seed producing area of Canyon County and the remainder of southwestern IDAHO. Larvae damaged 5 percent of the tassels in 5 Canyon County seed fields by mid-July. Damage was about 5-10 percent in mid-September, while at harvest in late September almost 100 percent of the ears were damaged. Control was excellent in 5-10 percent of the treated acreage. Larvae in ARIZONA ranged 70-280 per 100 sweeps of alfalfa in Gila and Yuma Valleys from mid-March through April. Larvae in field corn ranged 1-3 per ear in Cochise, Maricopa, Yavapai, and Yuma Counties from mid-July to the end of the season.

Corn earworm moths were first trapped at black lights in late May in western KANSAS and in eastern areas in early June. A heavy flight occurred in Barton County in early July and in eastern Kansas by mid-July. Another heavy flight in Barton County peaked about late August and peaked in Brown County in early September. A final heavy flight occurred in Barton County in late September and early October, but no similar flight followed in eastern Kansas. Results of a statewide fall corn earworm loss survey in field corn showed that the average percent of ears infested ranged from 24 percent in the northeast crop district to 94 percent in the south-central district. About 76,000 acres of corn and 1,600 acres of sorghum were treated in Kansas during 1971. Infestations were found the last week of May in OKLAHOMA. On corn, heavy infestations occurred in many areas in late June and early July. On sorghum heads, scattered moderate to heavy infestations were reported from late July to early October. Infestations on alfalfa and peanuts were generally not heavy. Surveys in ARKANSAS have shown that corn earworm does not damage sorghum as much as formerly thought due in part to the use of wide-open heads of sorghum. Only 12,890 acres were treated for this pest and losses amounted to 0.7 percent of the total crop. Limited first collections of corn earworm were made in MICHIGAN at the Monroe station on August 21 and 22. Adult collections at all blacklight stations did not increase until the week of September 3-10. On September 17 the population throughout Michigan was considered much lighter than normal. At no time did nightly blacklight collections exceed 10 adults; the average for mid-September would be closer to 45-50. Two shipments of late-harvested sweet cherry peppers in Monroe County were infested with corn earworms. In INDIANA, damage to corn grown for grain was negligible compared with damage in 1970. The corn insect damage survey showed an average infestation of 1.975 percent and a percent loss figure of 0.119. One factor in the decreased importance was early planting. Moths peaked during August 23-29 in the southwest and central districts, and September 6-12 in the northwest, and south-central.

Larvae first appeared in KENTUCKY in late July and peaked in late August. The heaviest damage was to late-planted corn. Corn earworm infested about 80 percent of the corn ears in fields throughout MISSISSIPPI, but larvae were not a problem on sorghum.

Corn earworm larvae in ALABAMA were widespread and damaging to pretassel corn and sorghum and to corn in the milk and dough stages. First-generation larvae appeared in March and April on crimson clover, vetch, and other winter legumes. Corn and grain sorghum supported generations which produced later generations on peanuts, soybeans, cotton, tomatoes, and other crops. Larvae of corn earworm and Celama spp. were heavy in southern and central Alabama in grain sorghum and required intensive control efforts. In FLORIDA damaged 51 percent of the early planted, unsprayed sweet corn at Belle Glade, Palm Beach County. In the fall, larvae appeared too late to establish a significant population.

A survey of several soybean fields in SOUTH CAROLINA on August 17 revealed eggs on growing tips and up to one larva for every 3 feet of row. By late August, populations were increasing in most counties, especially in the middle and lower part of the State. Populations became economic in many areas. Heavy infestations continued where controls had not been applied throughout September. In NORTH CAROLINA, soybean pod damage was light; however, scattered fields throughout the Coastal Plain received heavy damage. Damage was concentrated in some northeastern counties. Most damaged fields were of the late maturing upright varieties. Eggs and early instar larvae appeared in soybeans in Columbus and Johnston Counties about August 9. Spicaria fungus limited the larval population during the growing season. Wet weather and bushy soybean varieties seem to favor this disease.

The first corn earworm injury in VIRGINIA to corn was reported on June 28 from Lancaster, Fluvanna, and Carroll Counties where 30 percent of the whorls were infested. In Westmoreland, Richmond, and King and Queen Counties, ear damage appeared as early as July 22, but severe infestations were not detected until the following week. Surveys of 1,300 ears of dent corn showed a 29-percent infestation in Virginia during late July and early August. The Tidewater region south of the Rappahannock River and east of the City of Richmond averaged 46.5 percent of the ears infested while corn in the mountain areas averaged only 12.2 percent. On peanuts, larvae were less than 4 per 25 sweeps on August 26 in Greensville, Sussex, Southampton, Isle of Wight, and Nansemond Counties. Populations increased in early September but were far below 1970's populations. The weather in this region was wetter than in 1970 and may have been responsible for low egg production and/or higher mortality of young larvae. On soybeans, damage in the Tidewater region was heavier than in 1970, but infestations were spotty until late in the season. Larvae were present in subeconomic numbers in Nansemond, Sussex, Southampton, Isle of Wight, and Prince George Counties as early as August 21. This corresponded with peak catches of adults in the blacklight trap at Holland, Nansemond County. Larvae remained light in these and other Virginia counties until the third week in September when surveys revealed that 10-20 percent of the fields east of the City of Richmond and north of the James River were infested. Those fields most susceptible to infestation were those planted after July 1. Populations on the Eastern Shore developed slowly but increased rapidly in the fall and were more numerous than in 1970 but lighter than in 1969. About half of the soybeans on the Eastern Shore needed controls.

Corn earworm infestations were light to moderate in MARYLAND on corn, snap beans, and soybeans. On corn, infestations in mid-July ranged 1-4 percent in Talbot, Caroline, Wicomico, and Dorchester Counties. Damage levels stabilized and ranged 10 to 40 percent from July 30 through August 27. About 7-10 days later in Frederick, Harford, Montgomery, and Prince Georges Counties, populations peaked and damage ranged 5-30 percent. Controls were applied to 20,000 acres of processing corn. During late August and September, egg laying activities shifted from corn to snap beans and soybeans. About 6,000 acres of snap and lima beans in Caroline, Dorchester, Wicomico, and Somerset Counties received controls on a 3 to 4-day spray schedule. Damaged soybean pods rarely exceeded 5 percent during August and September. In DELAWARE the first adults were noted in blacklight traps on May 31 in Sussex County. By early July, last instar larvae were common, with counts of 1-2 per ear in early planted sweet corn. First-generation adults were present in blacklight trap collections by mid-July. Peak flights were light, averaging 30 per night in late August and mid-September.

CORN LEAF APHID (Rhopalosiphum maidis) and ENGLISH GRAIN APHID (Macrosiphum avenae) in NEVADA were heavy on small grains in Pershing County in late June and early July; about 2,000 acres received chemical treatments. In other areas these species were held at noneconomic levels primarily by lady beetles. Corn leaf aphid damaged barley in some UTAH fields in Millard, Washington, Cache, Sanpete, and Salt Lake Counties.

Corn leaf aphid in TEXAS ranged light to heavy on grain sorghum in Matagorda, Jackson, and Wharton Counties during late April. Populations increased throughout central and south-central Texas during April and early June, and throughout most of the South Plains and the panhandle during late June. Beneficial insects increased throughout the High Plains during late July. Infestations were present in sorghum from mid-May to late August in OKLAHOMA. Counts were heavy in several northeastern and panhandle counties between mid-June and mid-July and in the southwestern area the last half of August.

Corn leaf aphid infestations were moderate to heavy on sorghum throughout most of KANSAS during July. Corn leaf aphid was first found infesting whorls of seedling plants in southeast district during mid-May. In early July some heavy infestations appeared on sorghum in the northeast and east-central districts. In some fields reddening and some necrosis were seen in the terminal leaves. Later, populations declined and sorghum almost completely recovered and showed little evidence of previous injury. About 60,000 acres of sorghum were treated in Kansas during 1971 compared with about 4,000 acres in 1970. On field corn, no serious infestations were seen; about 42,000 acres were treated in 1971. In NEBRASKA, corn leaf aphid caused no serious problems to corn or grain sorghum. Statewide populations generally were below those of 1970.

Corn leaf aphid populations on corn in ILLINOIS were light in 1971 as in the previous two years. About 28,100 acres of corn were treated. Mid-July populations in the whorls indicated a potentially serious problem, but before populations could build to damaging proportions, 80 percent of the corn was beyond the critical late-whorl and early tassel stage. In INDIANA 31 percent of the corn examined was infested compared with 20 percent in 1970.

Corn leaf aphid populations were lighter than in 1970 throughout ALABAMA, especially in the central and northern areas. Populations remained below economic thresholds throughout MARYLAND. Two wingless nymphs per plant were first observed on July 9 in Oxford County, MAINE. Almost all infestations were light statewide.

GREENBUG (Schizaphis graminum) populations were moderate in south-central WASHINGTON, mainly in Benton and Franklin Counties, on young wheat and barley during late 1970 and early 1971. Many fields were severely damaged. Populations were light throughout OREGON on wheat. Populations in NEVADA were light on small grains in Clark and Nye Counties, being held in check by predators.

Greenbug populations on grain sorghum in NEW MEXICO were lighter than in 1970. Controls were applied in the eastern and southern areas. Appearing in COLORADO on Mesa County sorghum during June 12-18, greenbug was found in many eastern and western areas by June 26, and was found in all sorghum areas by mid-July. By July 24, heavy populations in the northeastern and southeastern areas required controls. Late sorghum was heavily damaged before controls were applied. Sorghum loss was estimated at 2-3 percent.

The first migrant greenbugs in NEBRASKA were caught at the Lincoln, Lancaster County, suction trap on April 20. Populations remained light on wheat through harvest. On grain sorghum, infestations on seedlings had begun to increase by mid-June. In July, numbers suddenly began to increase. By July 16, aphids ranged up to 2,000 per lower leaf in the southeastern area. Parasitism by Lysiphlebus testaceipes (a braconid) was highly variable with up to 30 percent in some fields and almost zero in others. Predators, mainly lady beetles, particularly Hippodamia convergens (convergent lady beetle), were very abundant in heavily infested fields and appeared to be the primary natural control in some fields. By July 30, greenbugs ranged 500-5,000 per plant in the east district and were destroying forage sorghums in the northeast district. By August 5, greenbugs had begun to decline in the southeast, east, and south districts. By August 10, parasites and predators had nearly eliminated greenbugs in most areas. In November, greenbugs ranged 500-600 per row foot on winter wheat in Hamilton County. Scattered fields suffered 2-20 percent loss of stand.

Greenbug was a major problem in KANSAS in 1971. About 1,000,000 acres of sorghum were treated. During early July an outbreak occurred in the northeast and east-central districts; predators and parasites were light. As high as 2,000 per plant were found in Jackson County and 1,500-1,600 in Shawnee and Douglas Counties. By mid-July, parasitic wasps, lady beetles in some fields, were controlling the greenbug in the east-central, northeast, and north-central districts. By late July, late-planted sorghum following wheat was often heavily infested in the northeast and east-central districts. Some fields were reinfested with winged greenbugs soon after treatment. Some seedling sorghum was destroyed in these districts. In early August, economic infestations were found only in the southwest district and the parasitic wasps were beginning to bring greenbug under control in the west-central district. Greenbug populations continued to decrease in eastern Kansas due primarily to the parasitic wasps. By mid-August, heavy parasitism by wasps was found in the northwest and southwest districts.

Scattered moderate to heavy infestations of greenbug were present on wheat in southwestern and west-central OKLAHOMA during January. By mid-January a few fields were sprayed. By early March, many fields were treated in these areas. Parasite activity began in mid-March. Heavy greenbug numbers and extremely dry weather destroyed many fields. During late March and early April, scattered heavy infestations occurred in a few south-central and central counties and in the southern edge of the northwestern area. By mid-April, populations declined in most areas due to heavy parasitism, plant death, or plant maturity. On sorghum, greenbugs appeared by mid-May, but did not become heavy until early July. During July, scattered heavy infestations occurred in the panhandle, north-central, and northeastern areas; some fields were treated. By the end of August, greenbug decreased to light populations in all areas. Infestations on wheat did not become common until late October.

Greenbug began to damage small grains in the Rolling Plains area of TEXAS during January. Damage was severe in this area due to the general drought conditions through early April. Controls were applied. In the South Plains and High Plains areas, the heaviest infestations were reported from Swisher, Briscoe, and Hall Counties in late March. Moderate to heavy infestations were noted on wheat near Denton beginning in late January and continuing through early March. During mid-April populations began to decrease statewide due to increasing populations of beneficial insects. During September and October greenbug populations were light on wheat in the panhandle. Some damage to small grains occurred in Cottle, Motley, and Dickens Counties in the Rolling Plains. On grain sorghum light infestations were first detected in south-central areas during mid-May. During June, populations increased in north-central Texas but declined in July due to pressure from beneficial insects. During late July populations began to build up in most panhandle counties. Controls were applied by many growers in the area. During August, greenbugs declined due to the activity of beneficial insects.

In ARKANSAS no acreage was treated for greenbug in 1971. Populations were light on sorghum in southwestern MISSOURI in early May. From mid to late July, moderate to heavy populations were reported on sorghum through the western area. The heaviest counts ranged 200-3,000+ per plant. Some chemical controls were applied in the west-central and northwestern areas. In IOWA greenbug infested grain and forage sorghum in July and August. Greenbug was first reported as serious on grain sorghum in Ringgold County on July 6. A total of 52,100 acres was treated by air and by ground. On forage sorghum, 10,125 acres planted after July 1 were killed by greenbug and 1,700 acres were sprayed. A total of 42 counties was reported as new records in 1971.

POTATO LEAFHOPPER (Empoasca fabae) damage to alfalfa was light to moderate in MARYLAND. First infestations were noted July 9; counts ranged 4-30 per sweep in Frederick, Baltimore, and Howard Counties. By July 15 the heaviest counts ranged 30-100 per sweep. In Queen Annes, Talbot, Dorchester, and Caroline Counties, populations ranged 5-25 per sweep the week ending July 23. Counts in the central areas ranged 60-250 per sweep in the most heavily infested fields during August. About 20 percent of the alfalfa required treatment during late July and August. Potato leafhopper failed to reach economic levels on commercial limas and snap beans mainly due to the timely application of insecticides. Populations appeared in VIRGINIA in mid-June and heavily damaged peanut foliage. Heavily damaged fields may have experienced a loss of 200-300 pounds of peanuts per acre. On alfalfa, nymphs and adults were the heaviest in several years; economic damage occurred throughout most of the alfalfa areas. The heaviest infestation was detected in an Augusta County field where about 75 nymphs and adults per sweep were reported on July 15. Infestations were also reported from Montgomery, Rockbridge, Roanoke, and Charlotte Counties.

SPOTTED ALFALFA APHID (Therioaphis maculata) appeared in COLORADO the week of June 12-28 in Weld County. It was noted in late July in Pueblo, Otero, and Crowley Counties. Populations were non-economic and damage to alfalfa was negligible. In NEW MEXICO spotted alfalfa aphid and PEA APHID (Acyrthosiphon pisum) caused serious damage to untreated alfalfa during spring. Scattered, heavy spotted alfalfa aphid infestations were reported in southwestern OKLAHOMA in January and February. By mid-March, populations had increased until heavy infestations were widespread. From mid-April to early May, infestations of 10,000-30,000 per square foot were reported in the southwestern counties. Populations were heavy in some west-central, central, and south-central counties. Aphids and extremely dry weather destroyed many alfalfa fields in the southwestern and west-central areas. Predators increased rapidly, and this aphid declined in all areas by mid-May. Populations were scattered and moderate during summer and generally light during fall and winter. Found in Dakota County for the first time in 1971, this aphid had not been recorded for over 10 years in MINNESOTA.

TOBACCO BUDWORM (Heliothis virescens) and CORN EARWORM (H. zea) were the most serious tobacco pests in ALABAMA. Control efforts were satisfactory. In VIRGINIA tobacco budworm larvae were light, but less than 10 percent of the growers reported economic damage. Those tobacco growers who planted early reported the most damage.

TOBACCO HORNWORM (Manduca sexta) populations increased over the past 2 years in FLORIDA. Tobacco hornworm and TOMATO HORNWORM (M. quinquemaculata) were observed in all fields surveyed in TENNESSEE with light damage reported by July. Most controls were effective. By September 1, parasitism was apparent in middle and eastern areas, and very little unharvested tobacco was damaged. Manduca spp. in MARYLAND were slightly less than last year's light to moderate levels. Larvae averaged less than 1 per 50 plants in the southern area throughout the season. Second-generation larvae in July and August were parasitized 5-20 percent by Apanteles congregatus (a braconid).

CORN, SORGHUM, SUGARCANE

Highlights:

EUROPEAN CORN BORER increased in several corn-producing States; however, decreases were recorded from Minnesota, Ohio, and Maryland. FALL ARMYWORM was heavy on sorghum in Texas, Oklahoma, and Illinois. BLACK CUTWORM was economic on corn in Iowa and Illinois. CORN ROOTWORMS damaged corn in Colorado, Utah, Nebraska, Missouri, and Illinois. Minnesota expects some problems with this pest in 1972 in some districts. SPIDER MITES were serious on sorghum and corn in Kansas, corn in Colorado, and sorghum in Texas. SORGHUM MIDGE was serious in some States on sorghum.

EUROPEAN CORN BORER (Ostrinia nubilalis) winter survival in NORTH DAKOTA increased from 69 percent in 1970 to 79 percent in 1971. The fall survey showed an increase in borer populations in all 5 major corn producing counties. Infestations averaged 130 borers per 100 plants compared with 57 per 100 plants during 1970. Second-generation larvae did not contribute to the higher infestation in 1971.

Record high populations of European corn borer in the fall of 1970 in NEBRASKA resulted in heavy flights of gravid moths in June 1971. The first moths were trapped at blacklight traps at Fairbury, Jefferson County, on June 6, at Mead, Saunders County, on June 1 and at Concord, Dixon County, on May 30. Flights peaked on June 17 at Concord and Aurora, Hamilton County. First-generation infestations were generally lighter in the south and central districts. First-generation moth flights began about July 22 and peaked about August 12. No evidence of a second-generation of moths was detected this year. Average fall borer infestations increased slightly over levels of 1970 in the 5 districts surveyed. Borer numbers nearly doubled in the central and south districts where a few individual fields had as many as 19 borers per plant. Heavy overwintering populations in the south, central, and east districts could indicate another heavy first brood in 1972.

A fall survey for European corn borer showed about the same percentage of infested stalks in 1971 as in 1970 in KANSAS in the east-central, and north-central districts. The number of borers decreased going into the winter in 1971 in the northeast and north-central districts and increased in the east-central districts. Catches of overwintered moths peaked at blacklight traps in Brown County during late May and early June and about mid-June in Republic County. About 54,000 acres of corn were treated during 1971, about twice the acreage treated in 1970. Nearly all treating was confined to the north-central, east-central, and northeast districts.

MINNESOTA had the heaviest overwintering European corn borer population in 10 years in 1970. A larval survival of 75 percent did not reduce the potential of heavy populations in 1971. Moth emergence and egg laying started about June 10. Surveys at the end of June indicated serious, heavy infestations developing in southern counties. Damaging numbers could also be found in the west-central, central, and east-central districts. Early planted cornfields, where corn was tallest at egg laying time, had the heaviest first-generation populations. Most of the controls applied were effective. Eggs of the second-generation were laid from the last week of July into September. Populations were heavy, but not so heavy as 1970's second generation. The heaviest shank feeding occurred in the southwest and south-central districts, averaging 40 percent and 45 percent respectively. Overwintering populations for 1971 are lighter than 1970's record number. The potential for heavy populations continues for 1972 in Minnesota.

The first European corn borer adults in MICHIGAN were collected at the Lenawee blacklight station on June 1. Field checks indicated that winter survival was high. Egg masses were found as far north as Montcalm County about June 14. Moth emergence peaked on June 15 in Lenawee County with a smaller peak June 19-20. By this date, some larvae were found on corn, snap beans, and potatoes. First-generation moth emergence started early, on July 16, due to an unusual period of hot and humid weather. On July 30 a peak of 249 was sampled at the Lenawee station. This generation was exceptionally heavy and late summer collections numbered 100+ weekly during August and into mid-September.

European corn borer averaged 321 per 100 plants in the fall survey compared with 241 in 1970 in IOWA. About 525,130 acres were treated for first-generation borers and 313,360 acres were treated for the second. The first pupa of the season was found in Boone County April 28, the earliest in 22 years. At Ankeny, Polk County, first-generation moth flight began June 3; the second-generation began July 18 and peaked August 9. There was a small flight of third-generation brood moths beginning September 6. Control cost $3,353,960. Loss due to dropped ears in Iowa was 80,500,000 bushels. Infested plants statewide increased from 65.93 percent in 1970 to 70.16 percent in 1971. Number of borers per 100 plants statewide increased from 119.50 in 1970 to 133.04 in 1971.

European corn borer survival in ILLINOIS was 67.3 percent compared with 91.1 percent in 1970 and with a normal 10-year average of 80-85 percent. This below-normal average was attributed to extended periods of cold weather with very little snow cover. The west district had the highest survival rate with 92.6 percent and the southwest and southeast had a survival rate of 62.9 percent. There was no concentrated damage to corn by first-generation borers. Second-generation populations statewide averaged 130 borers per 100 stalks, almost 50 percent higher than in 1970 and 3C percent higher than a 10-year average of 101 borers per 100 stalks. The heaviest areas of infestation in Illinois were the southern one-third and the northwestern corner, and the lightest areas were the northeastern corner and the east-central area. About 95,500 acres were treated.

European corn borer adults in INDIANA were observed in unpicked fields in Porter County June 1. The first blacklight trap catches were taken in the west-central and central districts during June 7-13. Peak flight activity occurred August 2-8 statewide, except for a second peak August 23-29 in the southwest district. Overwintering larvae averaged 99.94 per 100 stalks, more than twice that of 1970. A heavy first-generation population is expected for 1972.

European corn borer adults in OHIO emerged June 1 with a peak the last week of June, about 2 weeks later than in 1970. The number of moths caught in blacklight traps June 11-17 was 50 percent lower than in 1970. Larval damage was first reported from Adams County on June 23. Seventy-five percent or more of no-till corn showed feeding damage in Harrison County on July 15. First-generation moths were first caught in blacklight traps on July 23. In September, infestations ranged 13-34 percent. The State average was 73.2 borers per 100 plants, the lowest in 4 years.

Second-generation larvae in NEW HAMPSHIRE reached the overwintering stage, due to the longer growing period in the fall of 1971. Normally this generation does not overwinter sucessfully in New Hampshire. The infestation level in untreated sweet corn was 100 percent.

European corn borer moths first appeared in PENNSYLVANIA in the Hershey, Dauphin County area, on June 7 when the plants were about 6-inches tall. Larvae heavily infested corn in Centre County by October 3.

European corn borer pupation began about April 14 and by May 7 averaged 48 percent in Sussex County, DELAWARE. Adults averaged 10 per night in trap collections by May 24 and the first egg masses were noted on weeds. Adults peaked about June 11 at 20 per night in light trap collections. First-generation moth flights peaked at 150 per night the last of July. Second-generation moths peaked at 135 per night about August 23. The State average was 358 borers per 100 plants, an increase from 283 per 100 plants in 1970.

Infestation levels of European corn borer remained moderate to heavy in MARYLAND. Pupation peaked May 14-22 on the Eastern Shore. The first adult flights and egg laying began May 28 and June 4 in Kent, Queen Annes, Dorchester, and Talbot Counties. First and second instar larvae were active statewide during the week ending June 11. Damage levels ranged 10-40 percent June 25 in 10 percent of the acreage in Wicomico, Somerset, Dorchester, and Caroline Counties. Damage during the same period ranged 1-5 percent in Frederick, Baltimore, Harford, and Montgomery Counties. The heaviest damage ranged 80-100 percent in several fields throughout the State by July 9. First-generation pupation peaked July 19-26 on the Eastern Shore and July 26 to August 2 in central Maryland. Infestations stabilized during August with damage ranging 20-100 percent. Overwintering fall populations were the lowest in the past 4 years.

European corn borer adults began to appear in VIRGINIA on June 28 in Accomack County. Infestations of 5-20 percent were observed in Prince Edward, Prince George, Southampton, Greensville, Brunswick, Mecklenburg, Pittsylvania, and Henry Counties on July 7. In Carroll and Orange Counties 60 percent of the stalks in several fields were infested. In some eastern counties infestations were about 50 percent the last week of August. Adult counts at the blacklight trap at Holland, Nansemond County, increased sharply between August 3 and 23.

European corn borer egg masses on corn were first observed on June 6 in KENTUCKY. Hatch peaked on June 18 in the western areas. Larval activity peaked in the first half of July. Fall surveys indicated a moderate infestation of European corn borer in central and north-central Kentucky and a heavy infestation in the south-central area. Borers averaged 28.4 per 100 plants in the central area and 67.2 in the south-central area.

A fall survey in NORTH CAROLINA indicated that every county was infested with European corn borer. The Coastal Plain had the heaviest infestation with 47 percent of the plants infested. European corn borer continues to increase in all counties of SOUTH CAROLINA, with economic infestations observed in several areas. Some infestations of first generation borers began to appear the first week in July. A survey of 25-30 fields on July 29 indicated that as high as 10 percent of the corn crop in the State had damage.

European corn borer populations were found throughout northern ALABAMA, but were lighter than during 1970 in late corn. Clay County was reported as a new county this year. European corn borer and SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) limited corn production in MISSISSIPPI. Damage was moderate to late-planted corn in Marshall and Oktibbeha Counties.

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) in MISSOURI was first caught in a light trap May 29. Pupation of first-brood larvae was observed June 2 and the first emergence noted June 10. In the southeast district the percent of plants infested decreased from 36.05 percent in 1970 to 33.7 percent in 1971, and the percent of plants girdled increased from 5.85 in 1970 to 6.90 in 1971. Corn lodging in central TENNESSEE ranged 1-80 percent in the 12 newly infested counties. Southwestern corn borer was serious on corn in northern ALABAMA.

SUGARCANE BORER (*Diatraea saccharalis*) was treated on less than 7,000 acres out of 200,000 acres of sugarcane grown in FLORIDA. About 5 percent of the joints were bored, resulting in a sugar loss of about 4 percent.

FALL ARMYWORM (*Spodoptera frugiperda*) infestations were heavy throughout TEXAS on grain sorghum. Infestations were detected early in July in the Trans-Pecos area, by mid-July, on the gulf coast and throughout the High Plains, and in early August, throughout the Rolling Plains and south-central area. Larvae damaged sorghum from mid-July to early October in OKLAHOMA. Moderate to heavy infestations occurred in most areas, but were more common in western Oklahoma where sorghum was late due to dry weather in the spring and early summer. Fall armyworm was the most troublesome pest on sorghum in southern ILLINOIS. Many late-maturing fields were infested; about 21,500 acres were treated.

Fall armyworm damage was moderate to heavy on corn, milo, and sorghum in north-central, central, south-central, and southwestern areas of INDIANA. Damage was first noted in MARYLAND in Wicomico County July 30. Damage in the central area ranged 8-30 percent in late-planted corn by August 12. Damage to corn ears ranged 2-50 percent with the heavy infestations being spotty throughout Frederick, Howard, Montgomery, and Prince Georges Counties during September. During the same period on the Eastern Shore, infested corn ranged 2-10 percent.

BLACK CUTWORM (*Agrotis ipsilon*) larvae reduced corn and grain sorghum stands in NEBRASKA 5-100 percent in scattered fields in Richardson, Lancaster, and Dodge Counties. Larvae damaged 86,915 acres of field corn in IOWA. Loss on this acreage was estimated at 25 percent of the stand or a yield loss of 2,172,875 bushels. Controls on this acreage cost $304,202. A few fields of corn showed severe damage in ILLINOIS, mostly on bottomland in the western area. About 51,850 acres of corn were replanted and 57,400 acres received emergency control treatments.

SORGHUM WEBWORM (Celama sorghiella) damage in ARKANSAS was less than in 1970 due to earlier planting. Only 15,060 acres were treated and estimated losses amounted to 1.2 percent of the total crop. In MISSISSIPPI this species was the second most important pest of sorghum while SORGHUM MIDGE (Contarinia sorghicola) is number one. Damaging infestations of sorghum webworm appeared in early August in Noxubee and Oktibbeha Counties. Infestations continued in late-planted sorghum throughout October. Larvae damaged grain sorghum throughout southern and central ALABAMA in late August and later. The first larvae were reported in Greene and Sumter Counties August 4.

STALK BORER (Papaipema nebris) larvae in KENTUCKY damaged corn in Todd, Hickman, Christian, Warren, Ballard, and Livingston Counties. Infestations were uniform throughout many no-till fields but were usually only around the periphery in conventionally tilled fields.

WESTERN BEAN CUTWORM (Loxagrotis albicosta) adults were taken in light traps in mid-July in northeastern COLORADO. By July 24, egg masses and some hatched ones were found in many cornfields. Damage was less in 1971 than in 1970. A few fields in the northeastern area required control.

CORN ROOTWORMS (Diabrotica spp.) damaged several hundred acres of field and sweet corn in Cache, Box Elder, and Weber Counties in UTAH. Some of this acreage had 50 percent yield reduction. Larval damage to corn appeared in eastern COLORADO the first week of July. By mid-July, pupation was about 30 percent completed and some adults had emerged. Larval damage was heavy in nonrotated and untreated corn. Larvae and adults cost growers an estimated $1,520,000, excluding control costs.

Corn rootworm damage was noted on corn by July 9 in Richland County, NORTH DAKOTA. First adults appeared on July 17 in Cass County. Infestations and damage in 7 southeastern counties were not so severe as in 1970. Populations in NEBRASKA remained near the levels of 1970. Eggs hatched June 12-14 in Saunders County. The first pupae were noted July 2, and newly emerged adults were observed July 8. Root damage and lodging were reported from scattered locations in northeast, central, east, and south districts. Adults in central, eastern, and southern Nebraska averaged 1-3 per plant. Silk clipping and reduced pollination were negligible in most cornfields. In KANSAS about 820,000 acres of corn or about 65 percent of the crop was given a soil treatment to control corn rootworms. An additional 100,000 acres was treated for adults.

Corn rootworms first hatched during the week of June 14 in MINNESOTA. Most eggs hatched by June 28. Lodging appeared in early July. First adults were observed July 20 in the southern counties. August surveys showed that populations had declined in all surveyed districts except the east-central. Although numbers were lighter in 1971, damage to corn was still serious in some areas and populations were heavy enough in some districts to cause problems in 1972, especially in the southeast and south-central districts and to a lesser extent in the southwest and east-central districts. In IOWA corn rootworms were more abundant in corn-following-corn this year than they were in 1970. Of the 3,503,151 acres treated, 3,122,750 acres were treated at planting time. Stalk lodging was 5 percent in 1971 compared with 7.6 percent in 1970. Controls cost $10,565,000.

The first adult of WESTERN CORN ROOTWORM (*Diabrotica virgifera*) in MISSOURI was collected on June 24 at Irwin, Barton County. This field had high larval populations that caused severe lodging. On July 10, adults averaged 1,000 per 100 plants and larvae and pupae were still present in the field. Counts were low in surrounding fields. Adult corn rootworms ranged 10-500 per 100 plants in the north-central and northeastern areas. One field in Lincoln County averaged 760 NORTHERN CORN ROOTWORM (*D. longicornis*) adults per 100 plants. Western corn rootworm adults in the northwestern area averaged 100 per 100 plants in early August.

Corn rootworm larval populations were the heaviest in 4 years in some cornfields in ILLINOIS. Hatch was about 10 days later than in 1970, and newly hatched larvae were not seen until mid-June. Adults were heaviest in Boone and McDonough Counties with averages of 195.0 and 138.0 per 100 plants, respectively. Adults declined slightly in the northwest district (64.1 per 100 plants), were heaviest in the northeast (105.8 per 100 plants), and increased slightly in the west (64.4 per 100 plants), central (55.4 per 100 plants), and east (54.9 per 100 plants) districts. *D. virgifera* adults were found for the first time in 1971 in De Witt, Macon, Menard, Christian, Morgan, Sangamon, and Shelby Counties. Western corn rootworm is gradually displacing *D. longicornis* in the northwest, northeast, and west districts. Overall combined populations have declined. Northern corn rootworm adults were in the northeast district. Populations increased over those of 1970 in the northeast, west, central, and east districts and declined slightly in the northwest. About 29,600 acres were treated in Illinois for control of adults.

Western corn rootworm was found for the first time in MICHIGAN. Adults were found in sufficient numbers in Allegan and Cass Counties to indicate that this pest is established. It is probably generally distributed in small numbers in the southwestern area.

SOUTHERN CORN ROOTWORM (*D. undecimpunctata howardi*) damage in SOUTH CAROLINA was less than in 1970. Economic infestations were reported in Berkeley, Orangeburg, Williamsburg, Sumter, Bamberg, Hampton, and Lexington Counties.

MAIZE BILLBUG (*Sphenophorus maidis*) and *S. callosus* continued to show damaging populations in most SOUTH CAROLINA coastal counties. Activity peaked during May and June, with infestations of up to 10 per foot reported in June from Darlington County. Chemical controls were ineffective. In NORTH CAROLINA, *Sphenophorus* spp. adults damaged seedling corn in the Coastal Plain area during June. The most heavily infested fields have a long history, 10+ years, of corn.

WIREWORMS, primarily SOUTHERN POTATO WIREWORM (*Conoderus falli*) and *Melanotus communis* were the most important insect problem on FLORIDA sugarcane. Much of the sugarcane acreage was treated with soil insecticides, including flood-treated fields. Both species were widespread in corn and caused losses up to 15-20 percent of stand in inadequately treated or untreated corn in Palm Beach County. In properly treated corn, about 1-4 percent loss occurred.

SORGHUM MIDGE (Contarinia sorghicola) infestations were generally light throughout TEXAS. The heaviest infestations were on late-planted grain sorghum. Heaviest damage occurred during mid-July on late-planted grain sorghum in De Witt, Jackson, Refugio, Brazos, Burleson, Robertson, Collin, and Fannin Counties. During late July, populations increased throughout the Rolling Plains. Populations in the South Plains were generally light. Infestations occurred only in scattered late sorghum fields in the eastern half of OKLAHOMA in August and September.

Sorghum midge infestations were light, 2-4 adults per head, in southeastern MISSOURI in early July. These infestations increased until September counts of 50+ per head were observed in late-planted sorghum. Some of the very late-planted fields were completely destroyed. This species was the major pest of sorghum in ARKANSAS. Damage was reduced by early planting and by treating late-planted fields. Of 300,000 acres of sorghum, only 23,700 acres were treated. Losses amounted to 2.4 percent of the total crop.

Sorghum midge counts of 15+ per head infested late milo and sorghum in western TENNESSEE. This midge and SORGHUM WEBWORM (Celama sorghiella) severely damaged milo and sorghum in many fields. The former caused about 80 percent of this damage in most cases. In ALABAMA the first-generation was light on early grain sorghum. Third and later generations were heavy and caused heavy damage in isolated fields where blooming and high emergence of adults occurred on similar dates. First adults were reported July 7 in Dallas, Perry, and Montgomery Counties. Sorghum midge was abundant from mid-July until November in FLORIDA and caused much grain loss in Gadsden County. Samples during late August showed only 10-percent normal seeds.

CHINCH BUG (Blissus leucopterus leucopterus) survey in KANSAS showed overwintering populations to be slightly higher in 1971 than in 1970. Estimates indicated that about 2,000 acres of corn and 14,000 acres of sorghum were treated, and mostly in the central and southeast districts.

BANKS GRASS MITE (Oligonychus pratensis) populations on silage corn began increasing in Churchill County, NEVADA, in mid-July. By early August after 80 percent of the 2,300 acres had received chemical treatments, damage was held to a minimum. Banks grass mite could be found in many cornfields in eastern COLORADO by the week of July 30. Unseasonably cool weather and occasional showers following this period kept infestations down in many areas. In late August when heavy populations and damage appeared in the Arkansas Valley, controls were applied in many fields. Populations declined the week of September 17. Losses were estimated at one million dollars, excluding costs of control.

Banks grass mite on grain sorghum in TEXAS began to increase during early July in the Trans-Pecos area and continued to increase during July until cool, wet weather helped to decrease populations. In El Paso County, many fields were damaged, and 75 percent or more of the leaves in some fields were desiccated. No buildup occurred in the panhandle due to the wet, cool weather during late July, August, and September. On corn by July 16, populations were heavy in El Paso County building up in Reeves County, and were heavy and isolated in the Texas Panhandle. Heavy activity and desiccated leaves were noted in August in

El Paso and Hudspeth Counties. Damage to corn in the High Plains was light due to the cool, wet weather. Banks grass mite damaged corn in the panhandle of OKLAHOMA from mid-August to mid-September.

At least 3 spider mites, TWOSPOTTED SPIDER MITE (*Tetranychus urticae*), *Oligonychus pratensis*, and CARMINE SPIDER MITE (*T. cinnabarinus*) infested corn in KANSAS. Spider mites were a much more serious problem this year to sorghum and corn growers in the western area. Spider mites have been serious pests on corn in this area for the past 2 years. Significant infestations in corn occurred 2 weeks earlier than in 1970. Some workers observed that serious infestations developed faster when corn was drouth-stressed. *T. urticae* and *O. pratensis* damaged several thousand acres of field and sweet corn in UTAH. Controls were applied in Weber, Utah, and Emery Counties. Late summer injury was above normal.

SMALL GRAINS

Highlights:

FALL ARMYWORM infestations were heavy in small grains in Texas and Oklahoma. HESSIAN FLY damage was heavy in Kansas, Nebraska, Illinois, Maryland, and Kentucky.

Larvae of FALL ARMYWORM (*Spodoptera frugiperda*) and YELLOWSTRIPED ARMYWORM (*S. ornithogalli*) damaged fall wheat and oats in Tipton County, TENNESSEE. Larval counts were as high as 12 per square foot. Controls were applied in many cases. In TEXAS, *S. frugiperda* was on small grains in Wilbarger, Wichita, Dickens, Shackelford, Throckmorton, Young, and Baylor Counties in mid-September. Damage was also reported from scattered areas in north-central and south-central Texas. *S. frugiperda* infestations were found in all areas of OKLAHOMA on small grains, except in the panhandle, from late September to early November. Larvae ranged up to 20 per linear foot in some areas. Some scattered wheat, oat, and rye fields were destroyed. Populations declined by the end of October in most areas.

HESSIAN FLY (*Mayetiola destructor*) losses in KANSAS were estimated at about 3,031,000 bushels, 4 times the loss incurred in 1970, or $3,910,000. Districts incurring the heaviest losses were the central, north-central, south-central, west-central, and southwest. Surveys also showed that resistant wheat varieties had an average of 0.6 percent infested culms but susceptible varieties had an average of 8.1 percent statewide. In NEBRASKA, wheat had an average of 3.01 percent of the wheat culms infested with 3.96 puparia per 100 culms. Heaviest infestations occurred in the south, east, and central districts, which averaged 5.81, 5.16, and 4.94 percent infested, respectively. Losses for Nebraska were estimated at 227,757 bushels.

Hessian fly populations in wheat remained light in ILLINOIS. The infestation statewide was the same as in 1965, 1968, and 1969 when a record low of 2 puparia per 100 tillers was reached. The 10-year State average is 5 puparia per 100 tillers. The east-southeast district had the heaviest population of 6 puparia per 100 tillers. During late October and early November hessian fly damaged wheat in the west-southwest and east-southeast districts.

Many early planted fields in this area, planted before the "fly-free date" in susceptible varieties showed severe damage. Some fields were replanted and some were left standing. The extent of the damage will be seen in 1972. Puparia were found in 64 percent of the 212 wheatfields sampled in 1971 compared with 22 percent in 1970 in INDIANA. Less than 1 percent of the surveyed wheat carried resistance to Race B, the prevailing race in Indiana. Activity in the southern districts extended to mid-November because of the unusually warm weather.

In PENNSYLVANIA a race of hessian fly was suspected of thriving on a resistant variety of wheat in Lancaster County (30 percent infestation) and in Franklin County. Infestation was the heaviest of the past 4 years in MARYLAND. Hessian fly destroyed 70 percent of a 55-acre planting of small grain in Montgomery County. It also heavily damaged wheat planted in mid-September in central KENTUCKY.

WHEAT STEM SAWFLY (Cephus cinctus) increased stem cutting in Hard Red spring wheat from 0.7 percent in 1970 to 0.8 percent in 1971 in NORTH DAKOTA. Cutting was evident in 54 percent of the fields. The heaviest cutting was found in McLean, Sheridan, Pierce, and McHenry Counties.

BROWN WHEAT MITE (Petrobia latens) began increasing in NEVADA on small grains in late March and had developed heavy infestations by mid-April on 2,500 acres in Pershing County and 500 acres in Clark and Lyon Counties. Irrigation and/or heavy rains controlled these infestations except for 400 acres, which were treated chemically in Pershing County. In UTAH brown wheat mite damaged a few fields of dryland wheat at Monticello, San Juan County, and spring grains in Washington County. Brown wheat mite was noted in wheat in northeastern COLORADO during early April. Kept in check by rains, the light populations did not damage wheat. Brown wheat mite infested wheat in southwestern and west-central OKLAHOMA from late February through mid-April. By early April, populations were heavy in the northwestern and panhandle areas and in a few counties in the central and north-central areas. Infestations in the panhandle continued into early May. Very dry weather during winter and spring was an important factor in the increase in numbers.

WINTER GRAIN MITE (Penthaleus major) infestations were first reported as damaging small grains in TEXAS on February 12 in Foard and Hardeman Counties. Damage continued in the Rolling Plains area until early April.

ENGLISH GRAIN APHID (Macrosiphum avenae) populations on July 9 ranged up to 10 per head of wheat in Kootenai County, IDAHO. By July 22 these populations had been reduced to 1 per 10 heads, primarily by Hippodamia convergens (convergent lady beetle). Damaging populations failed to develop in Idaho because of the predators. Wingless adults and immatures in NORTH DAKOTA infested rye in Richland, Ransom, and Sargent Counties by the end of May. Widespread by June 4, infestations by August 6 ranged up to 30 per head in late fields in north-central counties. Infestations did not warrant control and did not cause appreciable damage due to the early harvest in most areas.

BARLEY THRIPS (*Limothrips denticornis*) adults were in rye in NORTH DAKOTA by the end of May in Richland, Ransom, and Sargent Counties. Economic infestations appeared in a few late-seeded fields of barley in Cavalier County by August 6. Infestations and damage were not widespread.

TURF, PASTURES, RANGELAND

Highlights:

CHINCH BUG was a serious lawn pest in Rhode Island and Maine.

GRASSHOPPER populations threatened to reach damaging numbers in IOWA during May but were sharply reduced by a fungus disease encouraged by wet weather in June. Fall grasshopper populations were generally noneconomic to light. DIFFERENTIAL GRASSHOPPER (*Melanoplus differentialis*) and REDLEGGED GRASSHOPPER (*M. femurrubrum*) reached levels of 40-50 per square yard in Washington and surrounding counties in northwestern ARKANSAS. Controls were applied to 1,500 acres of pasture in Washington County in August. In ALABAMA, the most important grasshopper species were *M. femurrubrum*, *M. differentialis*, and AMERICAN GRASSHOPPER (*Schistocerca americana*). The more serious damage was to clover seedlings during the fall in pastures and re-seeding clover-grass sod.

GRASSWORMS, mostly *Mocis latipes*, caused heavy damage in some pastures in the Belle Glades area of FLORIDA. During late October and early November an undiagnosed disease resulted in 95-percent mortality in some populations. Parasitism by tachina flies was also noted in collected *Mocis* pupae. In localized southeastern areas grassworms caused moderate to heavy damage on untreated St. Augustine grass and Bahia grass.

A SCARAB (*Phyllophaga fimbripes*) caused considerable damage to rangelands in Bent County, COLORADO. Larval infestations on 2,000 acres of rangeland resulted in up to 40 percent loss of grass.

BLUEGRASS BILLBUG (*Sphenophorus parvulus*) larval counts were 4 per 6-inch square of bluegrass July 1 in Pottawattamie County, IOWA. This was reported as a new county record. In eastern NEBRASKA, larval populations of 10 per square foot damaged bluegrass lawns and golf course fairways in July and August.

TWOLINED SPITTLEBUG (*Prosapia bicincta*) was primarily a pest of Coastal Bermuda grass in central and southern ALABAMA and of lawn grasses in isolated southeastern and southwestern areas.

MEADOW PLANT BUG (*Leptopterna dolabrata*) infested orchard grass and fescue in southwestern and south-central MISSOURI during May. Infestations on bluegrass were reported from the northern area in June.

CHINCH BUG (Blissus leucopterus leucopterus) surveys did not reveal any economic infestations in INDIANA. Early results from the fall survey indicate heavy populations can be expected in 1972. Infestations were first reported July 15, in Kent and Washington Counties in RHODE ISLAND. By July 26, widespread infestations of lawns were present in Providence, Kent, and Washington Counties. On August 2, lawns were damaged in Newport County. Complaints continued numerous into September. Chinch bug was the major insect problem in lawns, and much more than in 1970.

SOUTHERN CHINCH BUG (Blissus insularis) continued to be a severe pest of St. Augustine grass lawns in FLORIDA. This pest was also a serious problem on the turf farms in the Everglades area.

Two species of CHALCID WASPS were reported as new State records in PENNSYLVANIA. A Eurytoma gigantea female emerged from a goldenrod gall in Dauphin County during May and E. obtusiventris emerged from the same host in York County during July.

BROWN WHEAT MITE (Petrobia latens) in UTAH injured range grasses extensively in Washington County. Spring populations were sometimes heavy in Utah, Juab, and Box Elder Counties.

BANKS GRASS MITE (Oligonychus pratensis) infestations were heavy in NEVADA on experimental seed plots of bluegrass in Washoe County in February and June and on timothy hay in Douglas and Lyon Counties in April. Irrigation and chemicals were used as controls.

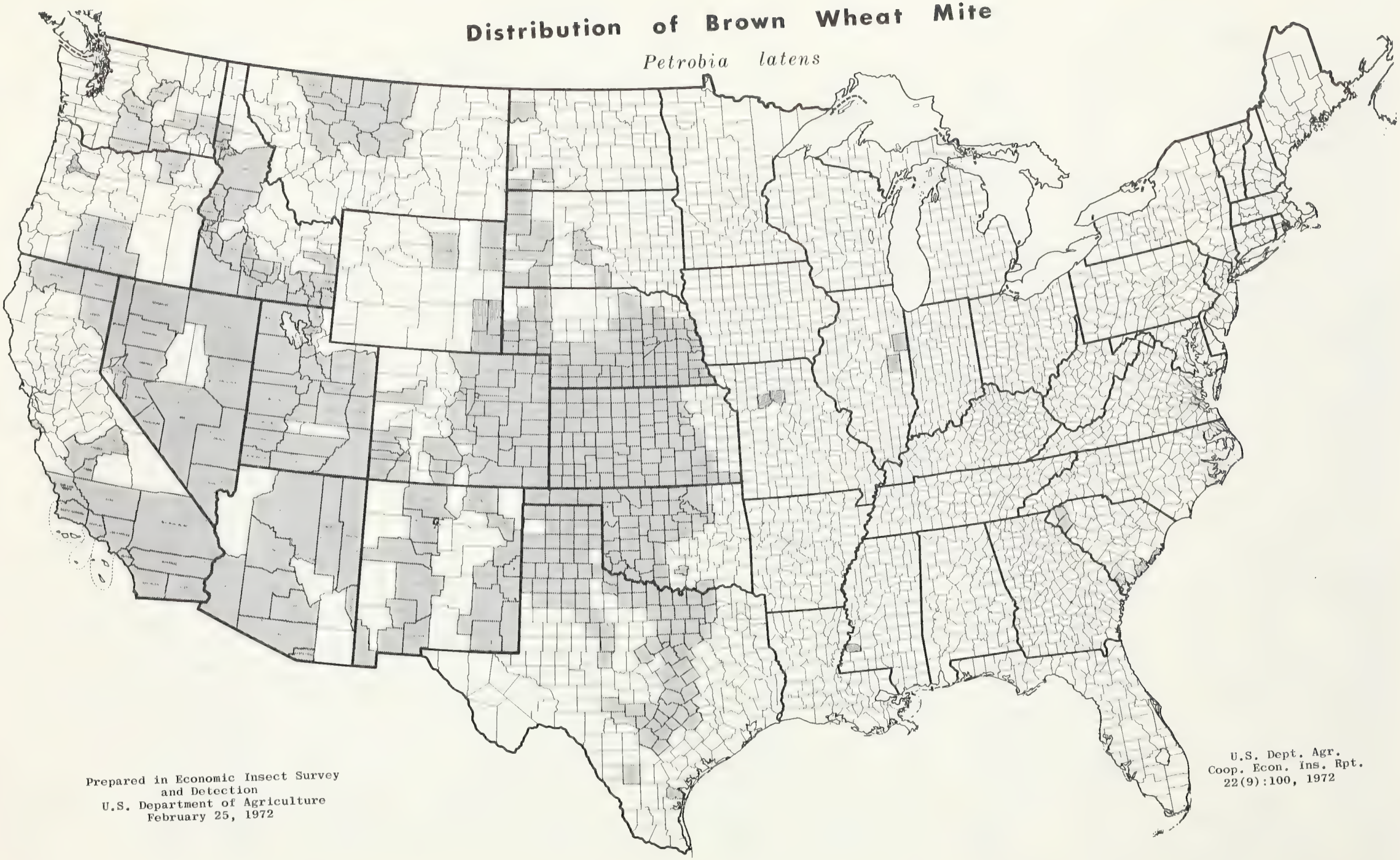
Weather of the week continued from page 76.

Pacific coast from Washington to northern California, with snow in the nearby mountains and eastward to New England. The snow over the Great Plains was mostly light flurries. The heavy rains along the coast were accompanied by winds, often exceeding gale force. The winds in the mountains drifted the snow badly. The winds gusted to 60 m.p.h. along the coast and over 90 m.p.h. over the higher Cascades. Several inches of snow fell in the northern Appalachians. Seven inches fell at Burlington, Vermont, and at Portsmouth, New Hampshire, and 6 inches at Worcester, Massachusetts. Several days of heavy rains in eastern Kentucky, western North Carolina, and southern West Virginia, along with melting snow resulting from the mild temperatures caused flash flooding along some streams and rivers. In Logan County, West Virginia, a coal-slag dam failed causing a disaster on Buffalo Creek. Dozens of persons were drowned, hundreds are still missing and other hundreds are without homes as the water rushed down the valley carrying away houses, automobiles, and people.

TEMPERATURE: Temperatures averaged below normal from the northern Great Plains to New England and south as far as Virginia, and above normal over the rest of the Nation. A large area from the Great Basin to the southern Great Plains averaged 6 degrees to 12 degrees warmer than normal.

Distribution of Brown Wheat Mite

Petrobia latens



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REPORT OF THE COMMITTEE ON INSECT SURVEYS AND LOSSES - 1972

The Southeastern Branch Entomological Society of America, Committee on Insect Surveys and Losses held a one-day workshop in Mobile, Alabama, in January 1972. Survey and loss estimates were submitted by each State and total cost and loss estimates were compiled on the most economically important insects during 1970.

Twenty-seven species were rated in order of their importance. Several additional species of insects were considered and not included in the listing because the workshop participants did not have sufficient information on losses and control costs for these species for them to be properly rated. Some of the more important species not included were imported fire ant, ticks, and cattle lice.

The 27 species were subsequently grouped in order of their importance and listed alphabetically in each group as follows:

1970 Estimated Losses and Control Costs

Group I - Losses ranging from $85,000,000 to $105,000,000

Boll Weevil - *Anthonomus grandis* Boheman
Corn Earworm - *Heliothis zea* (Boddie)
Eastern Subterranean Termite - *Reticulitermes flavipes* (Kollar)

Group II - Losses ranging from $40,000,000 to $50,000,000

Carpenterworm - *Prionoxystus robiniae* (Peck)
Horn fly - *Haematobia irritans* (Linnaeus)
Mosquitoes

Group III - Losses ranging from $30,000,000 to $40,000,000

Citrus Rust Mite - *Phyllocoptruta oleivora* (Ashmead) Florida only
Cockroaches

Group IV - Losses ranging from $20,000,000 to $30,000,000

Black Turpentine Beetle - *Dendroctonus terebrans* (Olivier)
Cabbage Looper - *Trichoplusia ni* (Hübner)
House Fly - *Musca domestica* Linnaeus
Bark Beetles - *Ips* spp.
Southern Pine Beetle - *Dendroctonus frontalis* Zimmerman

Group V - Losses ranging from $10,000,000 to $20,000,000

Citrus Snow Scale - *Unaspis citri* (Ashmead) Florida only
A Cone Moth - *Dioryctria amatella*
Fall Armyworm - *Spodoptera frugiperda* (J. E. Smith)
Green Peach Aphid - *Myzus persicae* (Sulzer)
Reproduction Weevils

Southern Chinch Bug - *Blissus insularis* Barker
Stink Bugs
Tobacco Budworm - *Heliothis virescens* (Barber)
Wireworms

Group VI - Losses ranging from $5,000,000 to $10,000,000

Lesser Cornstalk Borer - *Elasmopalpus lignosellus* (Zeller)
Northern Fowl Mite - *Ornithonyssus sylviarum* (Canestrini and Fanzago)
Peachtree Borer - *Sanninoidea exitiosa* (Say)
Sugarcane Borer - *Diatraea saccharalis* (Fabricius)
Tobacco Thrips - *Frankliniella fusca* (Hinds)

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Two Species of Imported Fire Ants in the United States

(Hymenoptera: Formicidae)

David R. Smith [1]

It is now necessary to adopt a new name for the imported fire ant prevalent in the southeastern United States. For some time there has been confusion concerning the identity of the imported fire ant, or ants, in this country. This stemmed from the presence of two forms, the red and black (or light and dark), and the poor taxonomic state of this complex in South America, the homeland of the North American populations.

A recent study by Buren (1972, Jour. Ga. Ent. Soc. 7(1):1-26) seems to have clarified the taxonomy of this group, the *saevissima* complex, at least to the standpoint of what does occur in the United States. What we have been calling *Solenopsis saevissima richteri* Forel with the ESA approved common name "imported fire ant," actually consists of two species, each independently introduced about 20 years apart, and each originating from widely separated points in South America. Buren identifies the two species as follows:

Solenopsis richteri Forel--Now given full species status, this is the species originally recorded by Creighton (1930, Proc. Amer. Acad. Arts and Sci. 66:88-89) from Mobile, Alabama. It was apparently introduced in the 1920's from Argentina or Uruguay. It has been referred to as the "dark form" in the United States and is now present in only several localities in northern Alabama and northern Mississippi.

Solenopsis invicta Buren.--This newly described species, according to Buren, originated from central South America, probably Mato Grosso, Brazil, and constituted the second introduction of a fire ant into the United States. The oldest series Buren examined was taken at Daphne, Alabama (near Mobile) in 1945. It is apparently a more vigorous species than *richteri* and met little competition, consequently spreading rapidly and pushing *richteri* into the few localities from which it is now known. This has been called the "red form" and is the dominant fire ant in the southeastern United States. Nearly the entire distribution of the "imported fire ant" in this country is this species.

The species name is spelled *invicta* throughout Buren's paper except for the species heading on pg. 9 where it is spelled "*Solenopsis invica*, n. sp." The name is derived from the Latin adjective "invictus" meaning unconquered or invincible, and Buren states on pg. 14," As the name implies, ... *invicta* seems more likely to be with us for some time to come."

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For further details, the reader is referred to Buren's paper. It is a significant step toward the classification of the saevissima complex of the New World and basic to further biological and control work on the fire ants. From now on, the imported fire ants in the United States should be called Solenopsis richteri Forel or Solenopsis invicta Buren. This will also necessitate a change of common names, and, I suggest that S. richteri be called the black imported fire ant and S. invicta be called the red imported fire ant.

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